

(1) GENERAL INFORMATION:

(i) APPLICANTS: Knuth, Alexander; Jager, Elke; Chen, Yao, Canlan, Matt; Gure, Ali, Old, Lloyd, Ritter, Gerd

(ii) TITLE OF INVENTION: ISOLATED PEPTIDES CORRESPONDING TO AMINO ACID SEQUENCES OF NY-ESO-1, WHICH BIND TO MHC CLASS I AND MHC CLASS II MOLECULES, AND USES THEREOF

(iii) NUMBER OF SEQUENCES: 14

(iv) CORRESPONDENCE ADDRESS:

(A) ADDRESSEE: FULBRIGHT & JAWORSKI LLP
(B) STREET: 666 Fifth Avenue
(C) CITY: New York City
(D) STATE: New York
(E) COUNTRY: USA
(F) ZIP: 10158

(v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: Diskette, 3.5 inch, 144 kb storage
(B) COMPUTER: IBM
(C) OPERATING SYSTEM: PC-DOS
(D) SOFTWARE: WordPerfect

(vi) CURRENT APPLICATION DATA:

(A) APPLICATION NUMBER: 09/062,422
(B) FILING DATE: October 2, 1998
(C) CLASSIFICATION: 530

(vii) PRIOR APPLICATION DATA:

(A) APPLICATION NUMBER: 08/937,263
(B) FILING DATE: April 17, 1998

(viii) PRIOR APPLICATION DATA:

(A) APPLICATION NUMBER: 08/937,263
(B) FILING DATE: September 15, 1997

(ix) PRIOR APPLICATION DATA:

(A) APPLICATION NUMBER: US 08/752,182
(B) FILING DATE: 03-October-1996

(viii) ATTORNEY/AGENT INFORMATION:

(A) NAME: Hanson, Norman D.
(B) REGISTRATION NUMBER: 30,946
(C) REFERENCE/DOCKET NUMBER: LUD 5466.3

(ix) TELECOMMUNICATION INFORMATION:

(A) TELEPHONE: (212) 688-9200
(B) TELEFAX: (212) 838-3884

(2) INFORMATION FOR SEQ ID NO: 1:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 752 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:

| | | | | | | | | | | | | | | | |
|------------|------------|------------|------------|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ATCCTCGTGG | GCCCTGACCT | TCTCTCTGAG | AGCCGGGCAG | AGGCTCCGGA | GCC | 53 | | | | | | | | | |
| ATG | CAG | GCC | GAA | GGC | CGG | GGC | ACA | GGG | GGT | TCG | ACG | GGC | GAT | GCT | 98 |
| Met | Gln | Ala | Glu | Gly | Arg | Gly | Thr | Gly | Gly | Ser | Thr | Gly | Asp | Ala | |
| | | | | | | | | | | | | | | | 15 |
| | | | | | | | | | | | | | | | |
| GAT | GGC | CCA | GGA | GGC | CCT | GGC | ATT | CCT | GAT | GGC | CCA | GGG | GGC | AAT | 143 |
| Asp | Gly | Pro | Gly | Gly | Pro | Gly | Ile | Pro | Asp | Gly | Pro | Gly | Gly | Asn | |
| | | | | | | | | | | | | | | | 30 |
| | | | | | | | | | | | | | | | |
| GCT | GGC | GGC | CCA | GGA | GAG | GCG | GGT | GCC | ACG | GGC | GGC | AGA | GGT | CCC | 188 |
| Ala | Gly | Gly | Pro | Gly | Ala | Gly | Ala | Thr | Gly | Gly | Arg | Aly | Pro | | |
| | | | | | | | | | | | | | | | 45 |
| | | | | | | | | | | | | | | | |
| CGG | GGC | GCA | GGG | GCA | GCA | AGG | GCC | TCG | GGG | CCG | GGA | GGA | GGC | GCC | 233 |
| Arg | Gly | Ala | Gly | Ala | Ala | Arg | Ala | Ser | Gly | Pro | Gly | Gly | Gly | Ala | |
| | | | | | | | | | | | | | | | 60 |
| | | | | | | | | | | | | | | | |
| CCG | CGG | GGT | CCG | CAT | GGC | GCG | GCT | TCA | GGG | CTG | AAT | GGA | TGC | 278 | |
| Pro | Arg | Gly | Pro | His | Gly | Gly | Ala | Ala | Ser | Gly | Leu | Asn | Gly | Cys | |
| | | | | | | | | | | | | | | | 75 |
| | | | | | | | | | | | | | | | |
| TGC | AGA | TGC | GGG | GCC | AGG | GGG | CCG | GAG | AGC | CGC | CTG | CTT | GAG | TTC | 323 |
| Cys | Arg | Cys | Gly | Ala | Arg | Gly | Pro | Glu | Ser | Arg | Leu | Leu | Glu | Phe | |
| | | | | | | | | | | | | | | | 90 |
| | | | | | | | | | | | | | | | |
| TAC | CTC | GCC | ATG | CCT | TTC | GCG | ACA | CCC | ATG | GAA | GCA | GAG | CTG | GCC | 368 |
| Tyr | Leu | Ala | Met | Pro | Phe | Ala | Thr | Pro | Met | Glu | Ala | Glu | Leu | Ala | |
| | | | | | | | | | | | | | | | 105 |
| | | | | | | | | | | | | | | | |
| CGC | AGG | AGC | CTG | GCC | CAG | GAT | GCC | CCA | CCG | CTT | CCC | GTG | CCA | GGG | 413 |
| Arg | Arg | Ser | Leu | Ala | Gln | Asp | Ala | Pro | Pro | Leu | Pro | Val | Pro | Gly | |
| | | | | | | | | | | | | | | | 120 |
| | | | | | | | | | | | | | | | |
| GTG | CTT | CTG | AAG | GAG | TTC | ACT | GTG | TCC | GGC | AAC | ATA | CTG | ACT | ATC | 458 |
| Val | Leu | Leu | Lys | Glu | Phe | Thr | Val | Ser | Gly | Asn | Ile | Leu | Thr | Ile | |
| | | | | | | | | | | | | | | | 135 |
| | | | | | | | | | | | | | | | |
| CGA | CTG | ACT | GCT | GCA | GAC | CAC | CGC | CAA | CTG | CAG | CTC | TCC | ATC | AGC | 503 |
| Arg | Leu | Thr | Ala | Ala | Asp | His | Arg | Gln | Leu | Gln | Leu | Ser | Ile | Ser | |
| | | | | | | | | | | | | | | | 150 |
| | | | | | | | | | | | | | | | |
| TCC | TGT | CTC | CAG | CAG | CTT | TCC | CTG | TTG | ATG | TGG | ATC | ACG | CAG | TGC | 548 |
| Ser | Cys | Leu | Gln | Gln | Leu | Ser | Leu | Leu | Met | Trp | Ile | Thr | Gln | Cys | |
| | | | | | | | | | | | | | | | 165 |
| | | | | | | | | | | | | | | | |

TTT CTG CCC GTG TTT TTG GCT CAG CCT CCC TCA GGG CAG AGG CGC
Phe Leu Pro Val Phe Leu Ala Gln Pro Pro Ser Gly Gln Arg Arg
170 175 180

593

TAA GCCCAGCCTG GCGCCCCCTTC CTAGGTCATG CCTCCTCCCC TAGGGAATGG
TCCCAGCACG AGTGGCCAGT TCATTGTGGG GGCCTGATTG TTTGTCGCTG GAGGAGGACG
GCTTACATGT TTGTTTCTGT AGAAAATAAA ACTGAGCTAC GAAAAAA

646

706

752

(2) INFORMATION FOR SEQ ID NO: 2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 31 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:

CACACAGGAT CCATGGATGC TGCAGATGCG G

31

(2) INFORMATION FOR SEQ ID NO: 3:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 32 base pairs
- (B) TYPE: nuclear acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 3:

CACACAAAGC TTGGCTTAGC GCCTCTGCCG TG

32

(2) INFORMATION FOR SEQ ID NO: 4:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4:

Ser Leu Leu Met Trp Ile Thr Gln Cys Phe Leu
5 10

(2) INFORMATION FOR SEQ ID NO: 5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 5:

Ser Leu Leu Met Trp Ile Thr Gln Cys

(2) INFORMATION FOR SEQ ID NO: 6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 6:

Gln Leu Ser Leu Leu Met Trp Ile Thr
5

(2) INFORMATION FOR SEQ ID NO: 7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 7:

Leu Leu Met Trp Ile Thr Gln Cys Phe Leu
5 10

(2) INFORMATION FOR SEQ ID NO: 8:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 8:

D
Ala Ala Asp His Arg Gln Leu Gln Leu Ser Ile Ser Ser Cys Leu Gln
5 10 15

Gln Leu

(2) INFORMATION FOR SEQ ID NO: 9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 9:

Val Leu Leu Lys Glu Phe Thr Val Ser Gly Asn Ile Leu Thr Ile Arg
5 10 15

Leu Thr

(2) INFORMATION FOR SEQ ID NO: 10:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 10:

Pro Leu Pro Val Pro Gly Val Leu Leu Lys Glu Phe Thr Val Ser Gly
5 10 15

Asn Ile

(2) INFORMATION FOR SEQ ID NO: 11:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 11:

Gly Ala Ala Ser Gly Leu Asn Gly Cys Cys Arg Cys Gly Ala Arg Gly
5 10 15

Pro Glu

(2) INFORMATION FOR SEQ ID NO: 12:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 12:

D/
Ser Arg Leu Leu Glu Phe Tyr Leu Ala Met Pro Phe Ala Thr Pro Met
5 10 15

Glu Ala

(2) INFORMATION FOR SEQ ID NO: 13:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 13:

Thr Val Ser Gly Asn Ile Leu Thr Ile Arg Leu Thr Ala Ala Asp His
5 10 15

Arg Gln

(2) INFORMATION FOR SEQ ID NO: 14:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 6 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 14:

Leu Leu Met Trp Ile Thr

5